



# CLPX

*2002 - 2003*

## **NASA Cold Land Processes Field Experiment Overview and Preliminary Results**

**For more CLPX information:**

**[www.nohrsc.nws.gov/~cline/clp.html](http://www.nohrsc.nws.gov/~cline/clp.html)**



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2002 - 2003

## Cold Land Processes Experiment

### PURPOSE:

Develop the quantitative understanding, models, and remotely sensed measurements needed to extend our local-scale understanding of **water fluxes, storage and transformations** in cold land areas to regional and global scales.

Extensive in situ Snow and Soil Measurements

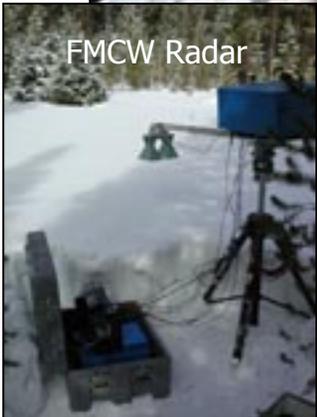


NASA DC-8 Airborne Laboratory with AIRSAR, POLSCAT, and PSR instruments.



NOAA Turbo Commander with Gamma Snow Water Equivalent Measurement instrument.

FMCW Radar



Japan's GBMR Passive Microwave Radiometers



Develop new capabilities to measure snow and frozen ground properties using active and passive **microwave remote sensing**.

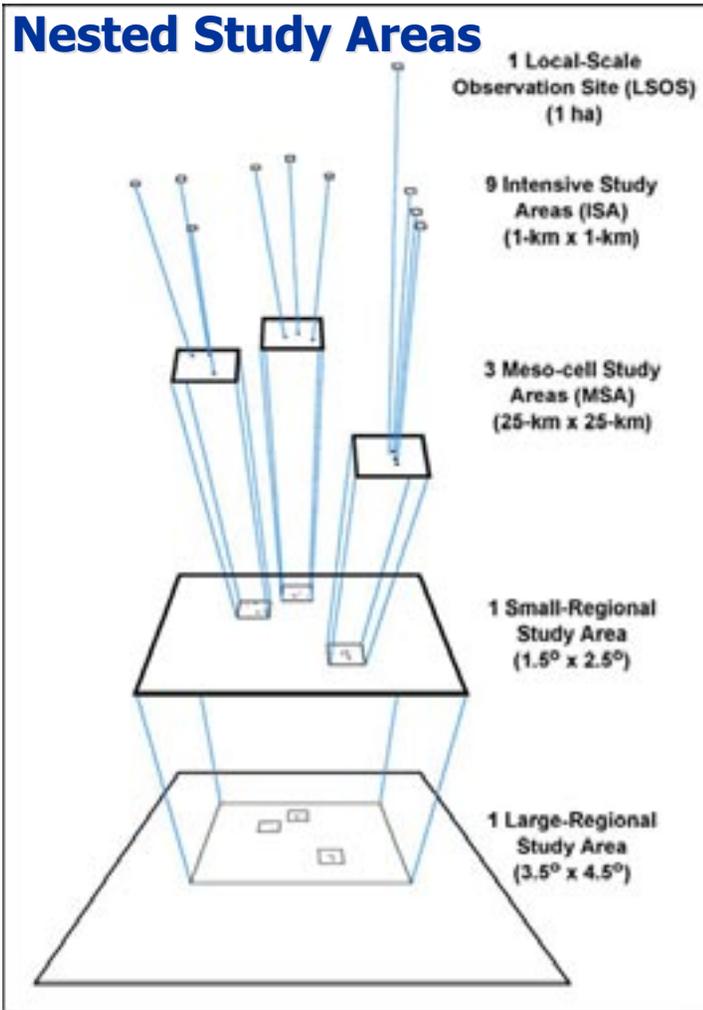


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## Cold Land Processes Experiment

### Nested Study Areas



Multi-scale, multi-sensor approach to build comprehensive data set needed to meet NASA Earth Science Enterprise science objectives.

Moderate Snow Packs (~1 m) in the Fraser MSA



Shallow Snow Packs (~20 cm) in the North Park MSA



Deep Snow Packs (~2 m) in the Rabbit Ears MSA



The nested study areas in Colorado, USA provide a comprehensive range of snow and frozen soil characteristics.



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## Cold Land Processes Experiment

Airborne platforms provide active and passive microwave remote sensing data and gamma radiation validation data to **validate and improve algorithms** and develop sensor specifications for a **future space flight mission to measure snow and frozen ground**.

**NASA P-3B:** PSR (X-, Ku, K-, Ka-, and W-Band Radiometer)



**NOAA AC690:** GAMMA  
( $<0.3$  nm Snow Water  
Equivalent Detection)  
from 500' AGL



**NASA DC-8:** AIRSAR (L- & C-Band  
Synthetic Aperture Radar), and  
POLSCAT (Ku-Band Scatterometer)

